

What is claimed is:

1 1. An automatic adjustment system for source current
2 and sink current mismatch, comprising:

3 a startup compensation/setup device, to perform
4 initialization current compensation and
5 accordingly implement a control reference table;

6 a determination device, connected to the startup
7 compensation/setup device through a second switch,
8 to output a control signal according to the
9 control reference table; and

10 a current compensation device, connected to the startup
11 compensation/setup device through a first switch
12 and to the determination device, to switch
13 corresponding internal switches on and off
14 according to the control signal and complete the
15 desired compensation when the source current is
16 the same as the sink current.

1 2. The automatic adjustment system according to claim
2 1, wherein the first switch has a closed state during the
3 initialization current compensation and an opened state
4 after the initialization current compensation completed.

1 3. The automatic adjustment system according to claim
2 1, further comprising:

3 a transmission line, connecting the current
4 compensation device to the startup
5 compensation/setup device;

6 a series of at least one first constant current source
7 and at least one third switch, one end of the
8 series connected to the transmission line and the
9 other end connected to a positive voltage source;
10 a series of at least one second constant current source
11 and at least one fourth switch, one end of the
12 series connected to the transmission line and the
13 other end connected to a ground voltage.

1 4. The automatic adjustment system according to claim
2 1, wherein the startup compensation/setup device comprises a
3 detecting resistor, an amplifier with negative terminal
4 connected to the detecting resistor, an analog-to-digital
5 converter connected in series to the amplifier, and a logic
6 controller connected in series to the analog-to-digital
7 converter.

1 5. The automatic adjustment system according to claim
2 1, wherein the determination device consists of a bandgap
3 reference circuit, a comparator with negative terminal
4 connected to the bandgap reference circuit, and a selector
5 with two input terminals respectively connected to the
6 comparator and the second switch and output terminal
7 connected to the current compensation device.

1 6. An automatic adjustment system for source current
2 and sink current mismatch, comprising:

3 a first compensation unit, having multiple circuits,
4 each consisting of a first constant current source
5 and a first compensation switch in which, for
6 source current compensation, an input of the first

7 constant current source is connected to a positive
8 voltage source and an open terminal of the first
9 compensation switch is connected to a transmission
10 line;

11 a second compensation unit, having multiple circuits,
12 each consisting of a second constant current
13 source and a second compensation switch in which,
14 for sink current compensation, an output of the
15 second constant current source is connected to a
16 ground voltage and an open terminal of the second
17 compensation switch is connected to the
18 transmission line, wherein the first and second
19 compensation units form a railing configuration;

20 a first switch, having a joint terminal connected to
21 the transmission line and an open terminal to be
22 connected to the joint terminal to form a pathway
23 when initialized and to be disconnected to the
24 joint terminal to form an open circuit after
25 initialization;

26 a detecting resistor, connected to the open terminal of
27 the first switch, to detect source current and
28 sink current mismatch;

29 an amplifier, having a positive input terminal, a
30 negative input terminal, a first output terminal
31 and a second output terminal, the positive input
32 terminal connected to the open terminal of the
33 first switch, the negative input terminal
34 connected to a free end of the detecting resistor
35 to compare current difference between two ends of
36 the detecting resistor, wherein the largest and

37 smallest differences are respectively output
38 through the first and second output terminals;
39 an analog-to-digital converter, connected to the first
40 and second output terminals of the amplifier, to
41 convert the largest and smallest differences from
42 analog to digital;
43 a logic controller, connected to the analog-to-digital
44 converter, to set up a control reference table
45 according to the largest and smallest differences
46 for required current compensation reference;
47 a second switch, having an open terminal and a joint
48 terminal connected to the logic controller; and
49 a selector, connected to the open terminal of the
50 second switch, to output a control signal
51 according to the control reference table and a
52 comparison value after the second switch is closed
53 such that one or more circuits in the first or
54 second compensation unit are turned on, thereby
55 automatically performing current compensation to
56 produce source current and sink current matching.

1 7. The automatic adjustment system according to claim
2 6, further comprising a low pass filter, connected to the
3 transmission line and the joint terminal of the first
4 switch, to filter unwanted signals and thus generate an
5 output voltage.

1 8. The automatic adjustment system according to claim
2 7, wherein the selector further comprises a comparator,
3 connected to the low pass filter, to receive the output
4 voltage from the low pass filter, compare it to a reference

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- 5 voltage from an external bandgap reference circuit, and
- 6 generate the comparison value.